

FIG. 1A

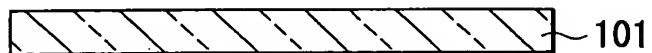


FIG. 1B

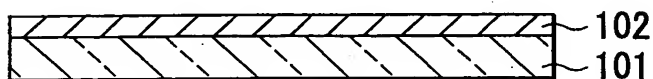


FIG. 1C

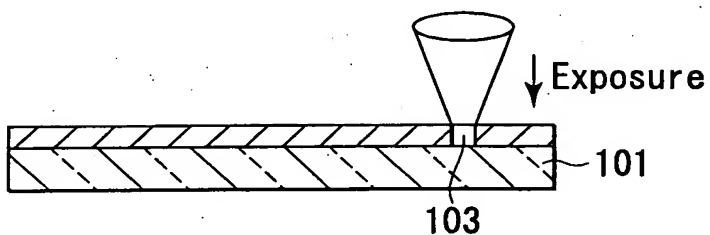


FIG. 1D

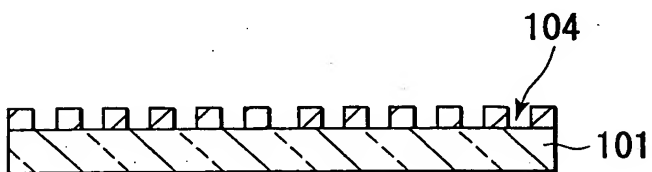


FIG. 1E

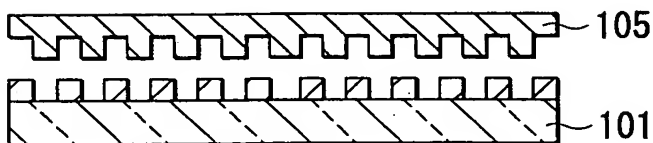


FIG. 2A

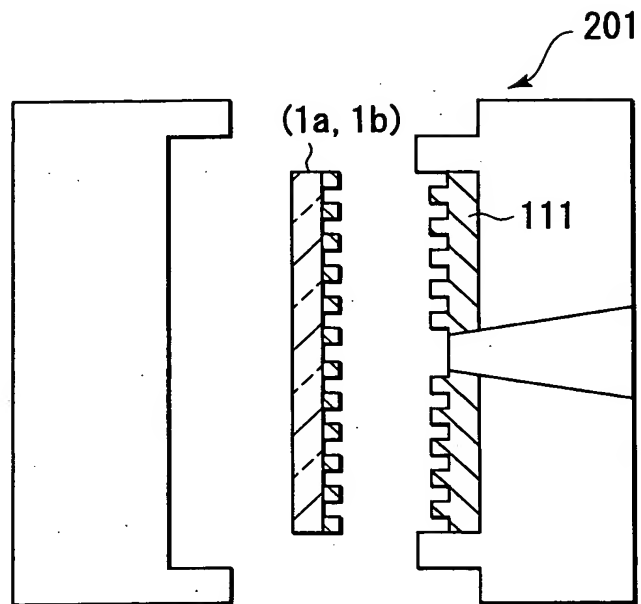


FIG. 2B

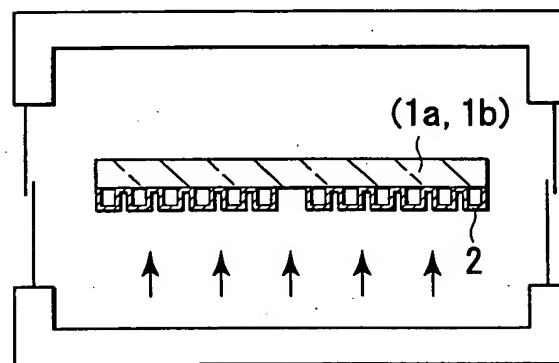
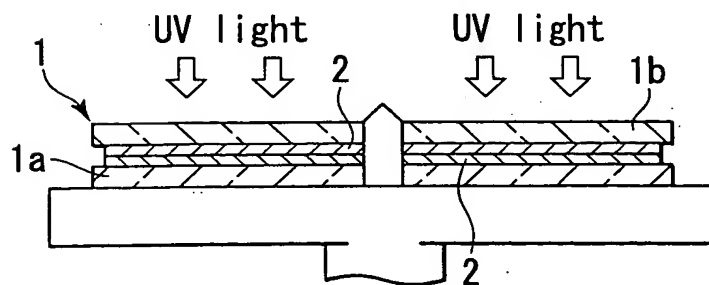


FIG. 2C



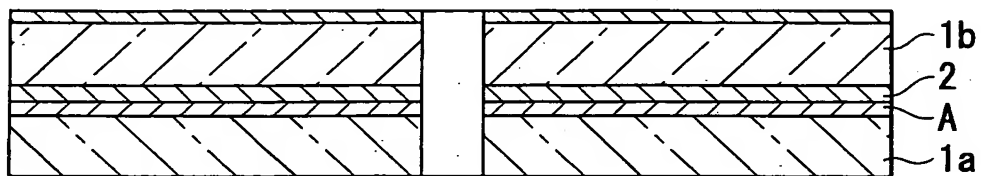


FIG. 3

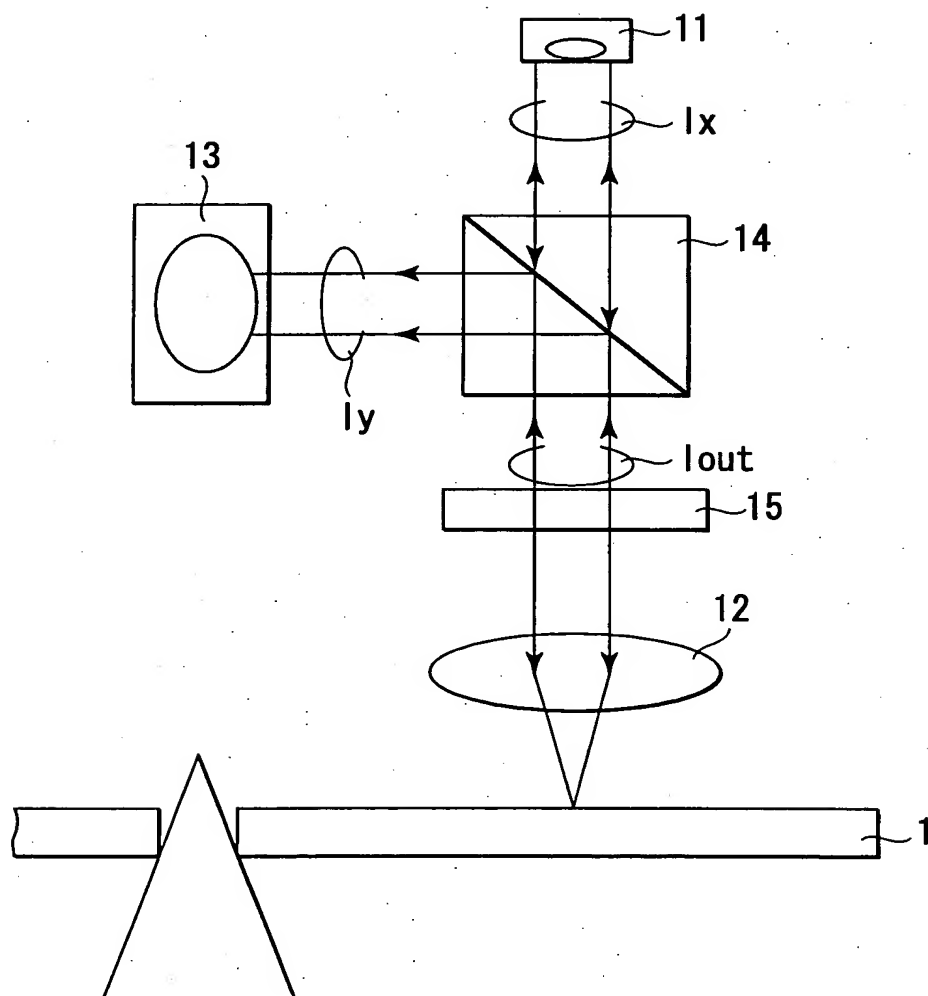


FIG. 4

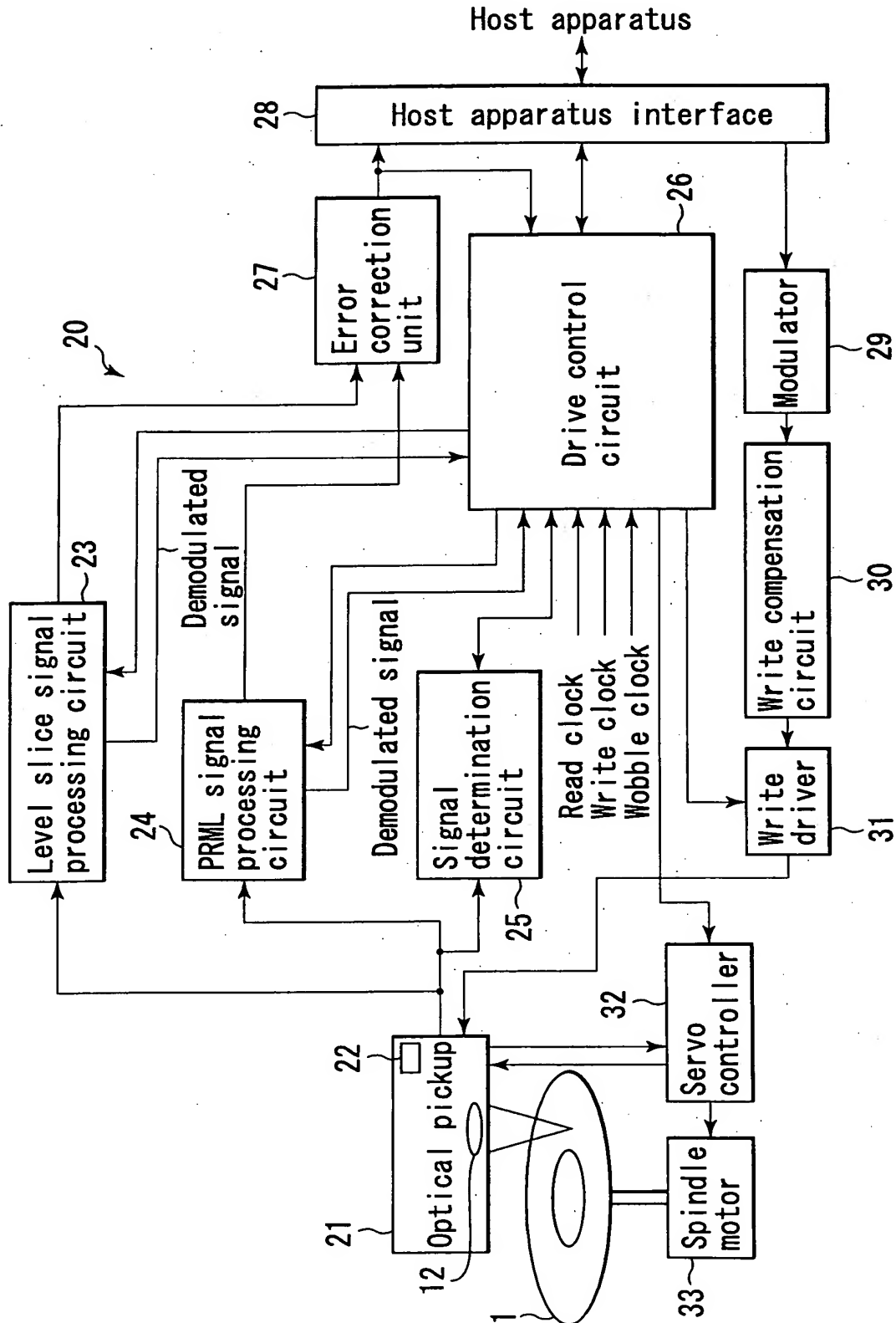


FIG. 5

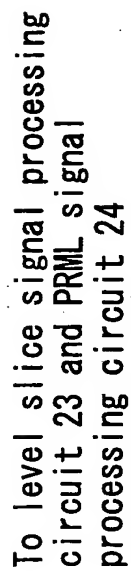


FIG. 6

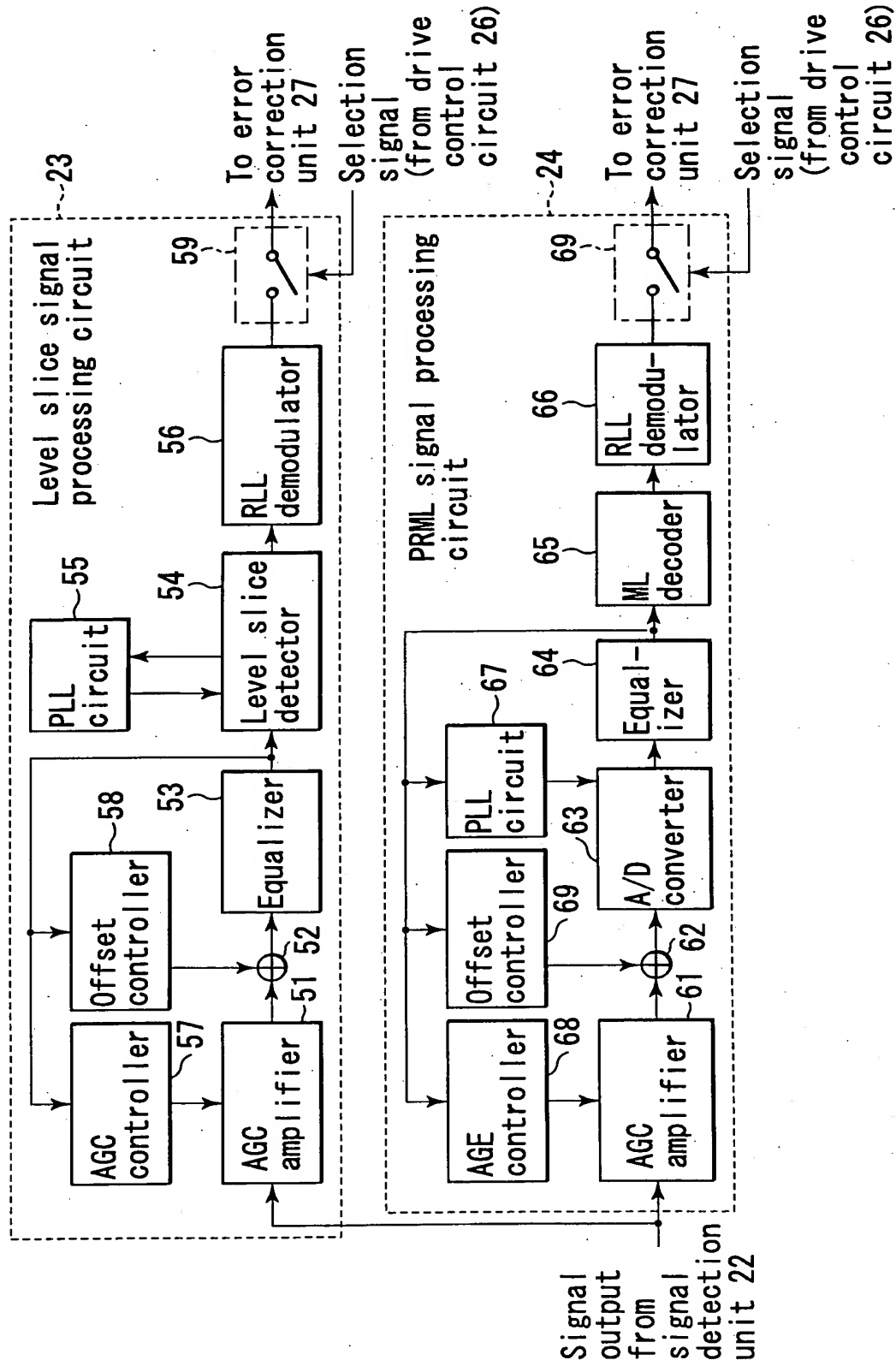


FIG. 7

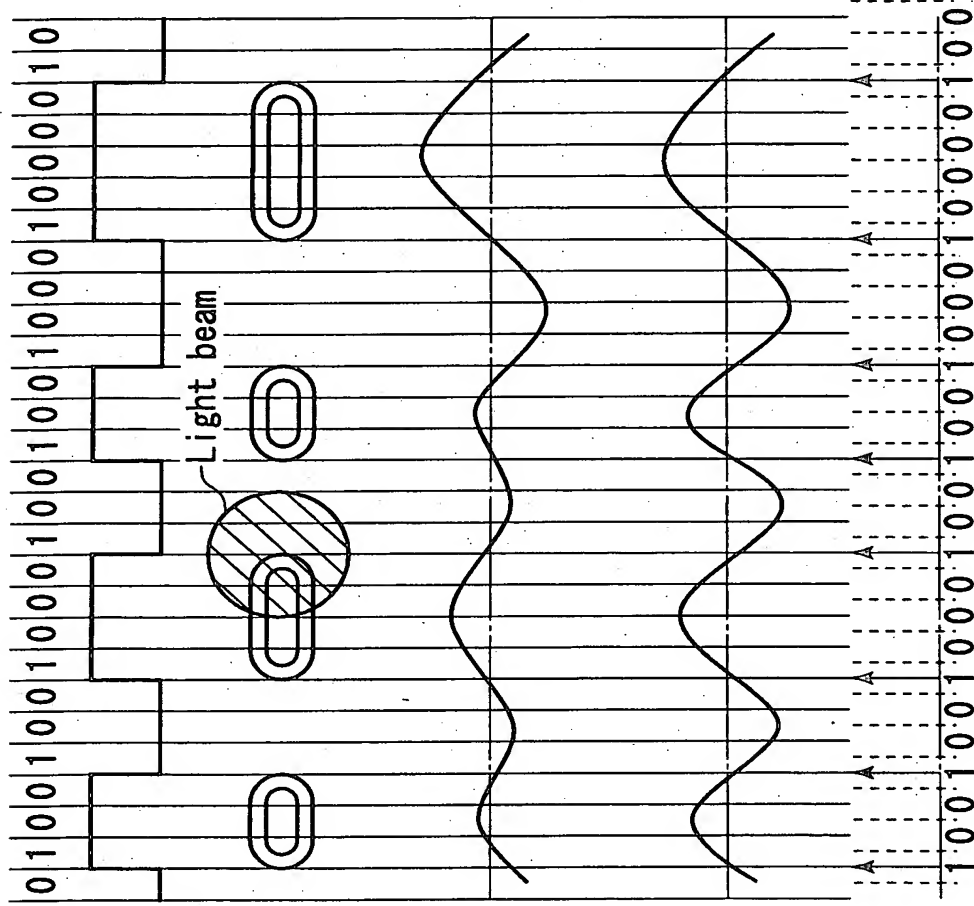


FIG. 9A

FIG. 9B

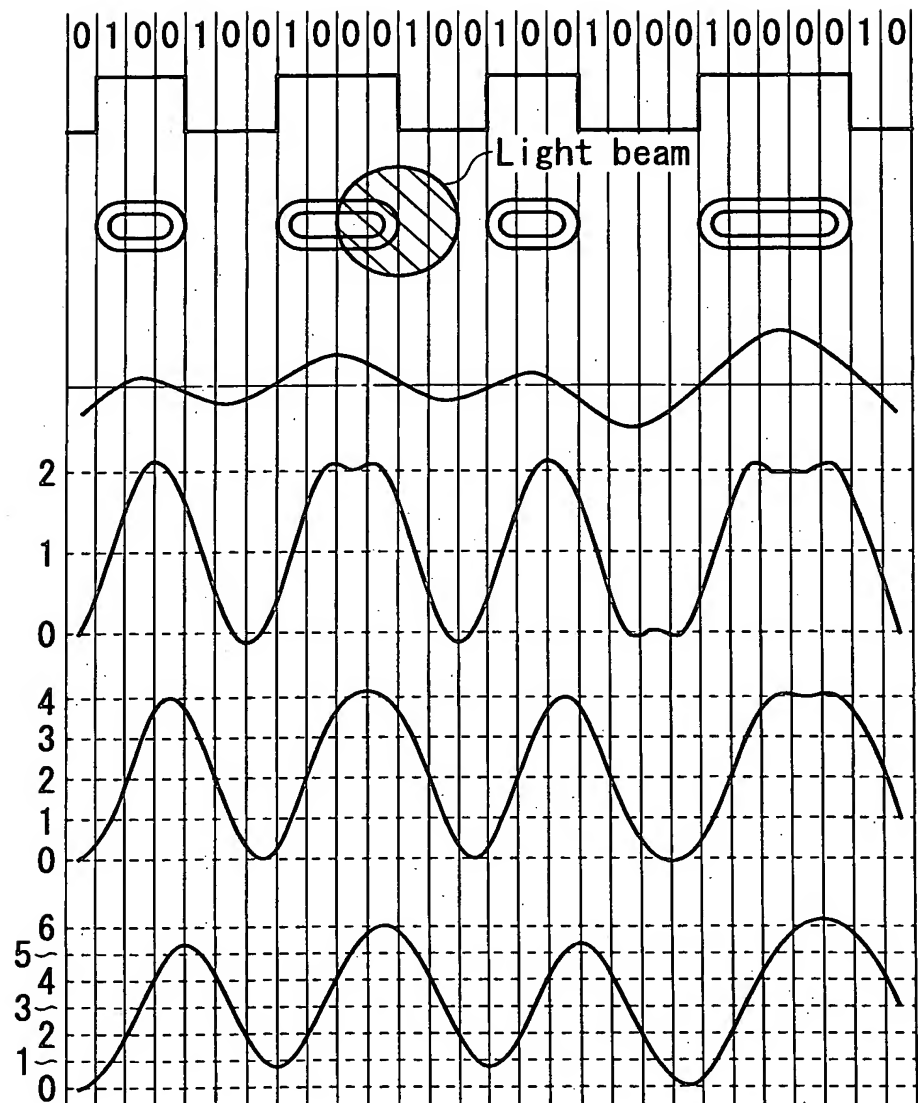
FIG. 9C

FIG. 9D

FIG. 9E

FIG. 9F

FIG. 9G



Sample series of
equalized signal
and series
selected by
Viterbi decoder

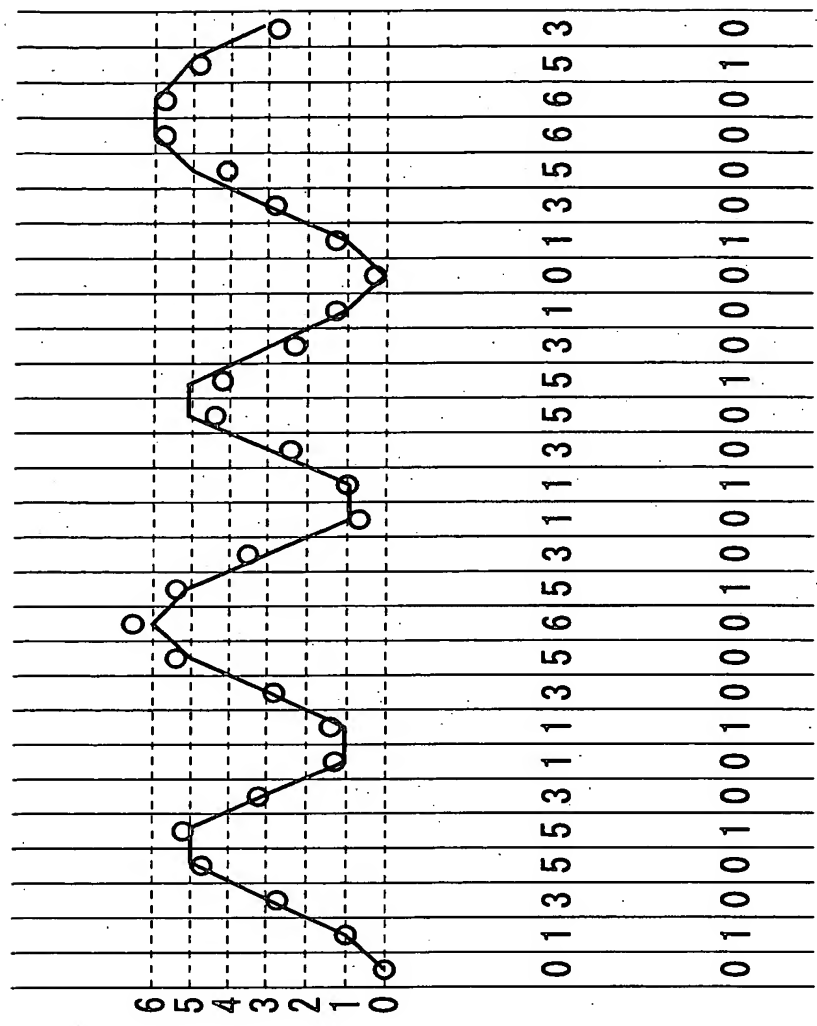


FIG. 10A

Signal level of
selected series

FIG. 10B

Decoded data

FIG. 10C

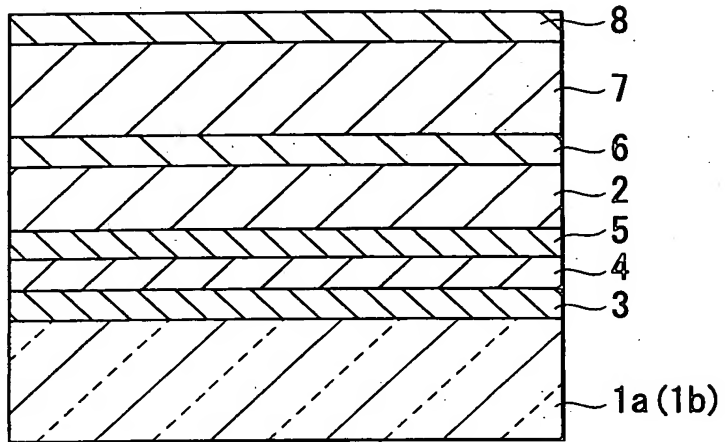


FIG. 11

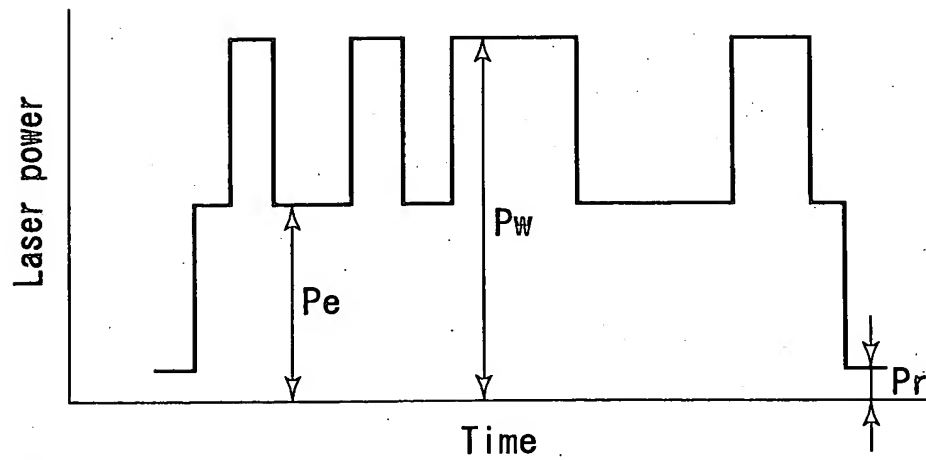


FIG. 12

View explaining data structure of lead-in area in reproduction-only information recording medium

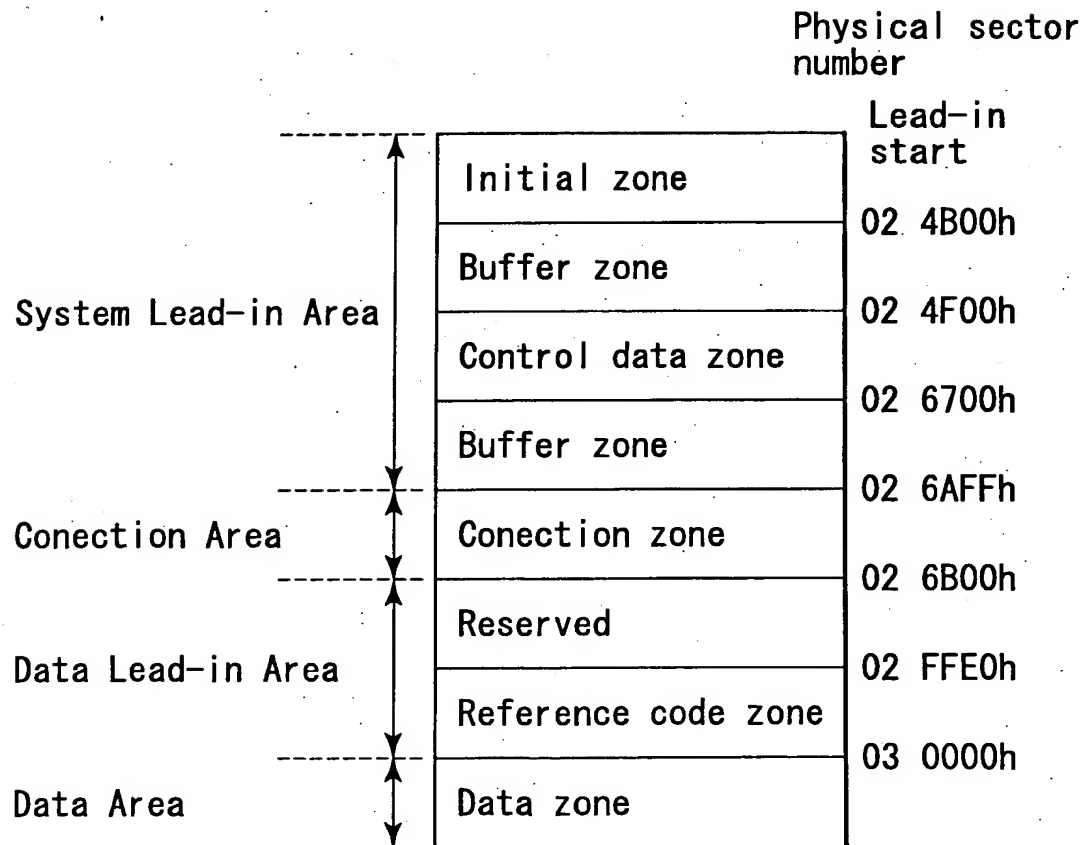
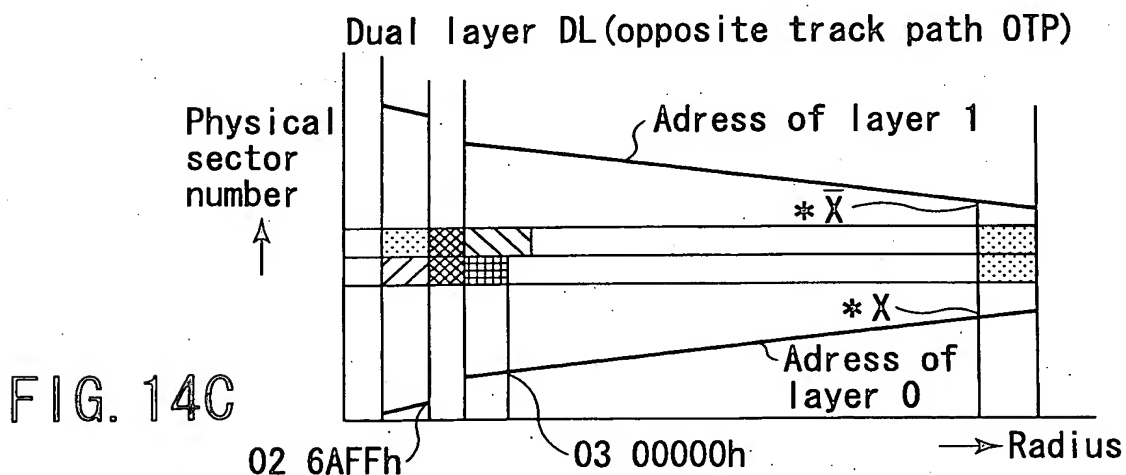
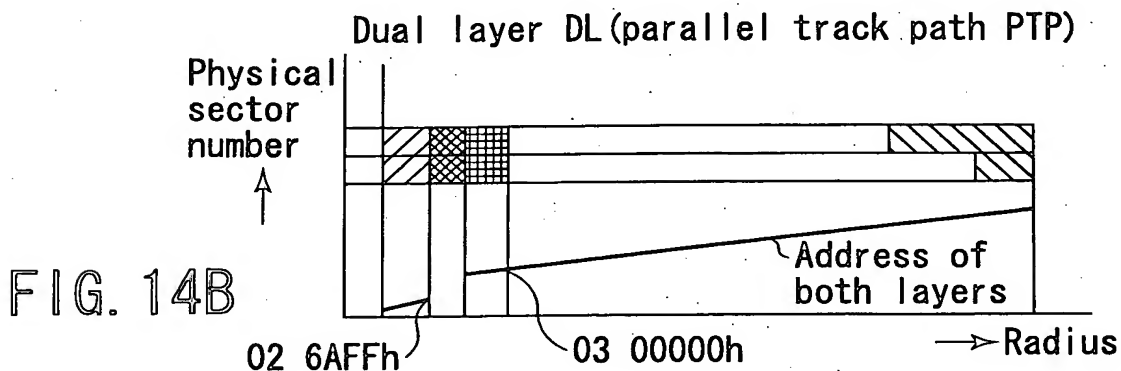
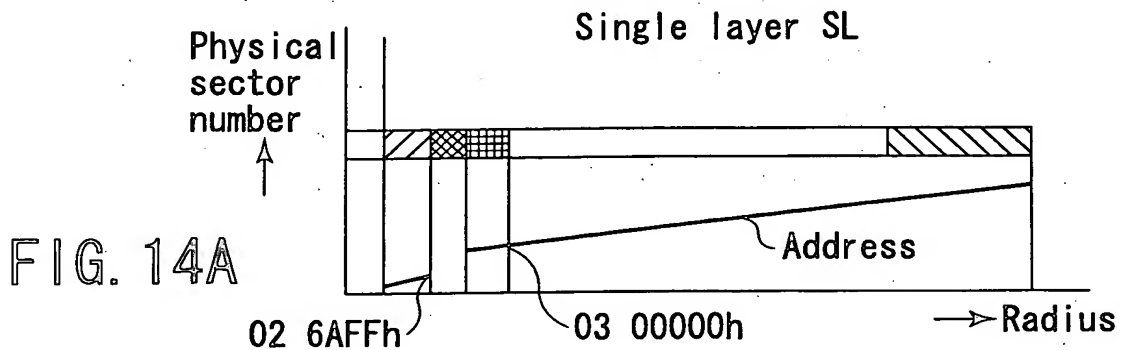


FIG. 13



- | | |
|-------------------------|--------------------------|
| □ : Data area | ▨ : Middle area |
| ▧ : System lead-in area | ▩ : Data lead-out area |
| ▦ : Connection area | ▤ : System lead-out area |
| ▥ : Data lead-in area | |

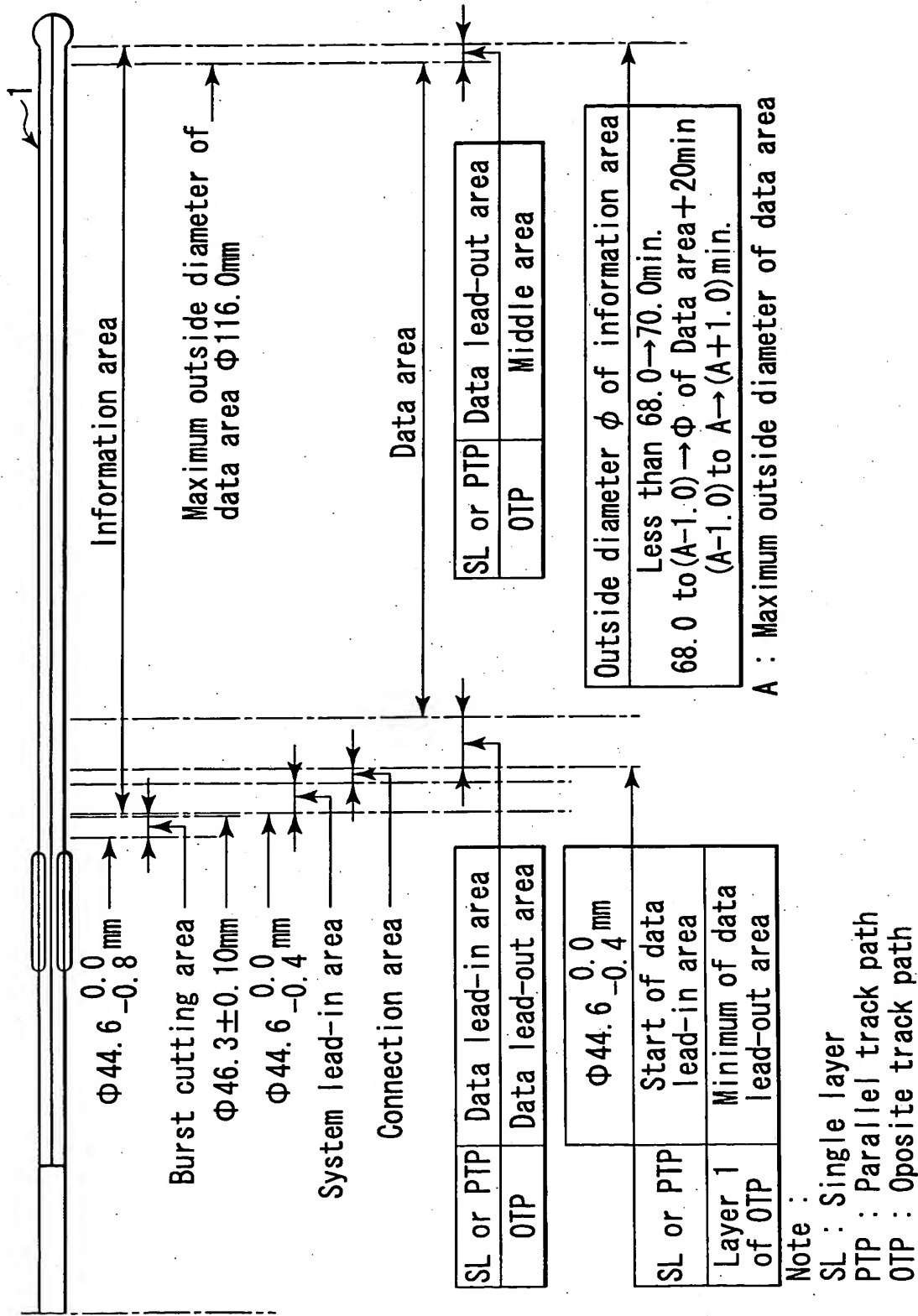


FIG. 15

Table explaining recorded data density of respective regions in reproduction-only information recording medium of the present invention

Parameter		Single layer	Dual layer
<ul style="list-style-type: none"> • User data capacity • Wavelength of laser diode • Numerical aperture of objective lens 		15 Gbytes/side	30 Gbytes/side
		405 nm	
		0.65	
• Data bit length	System lead-in area	0.306 μ m	
	Data lead-in area	0.153 μ m	
	Data area		
	Data lead-out area		
• Channel bit length	System lead-in area	0.204 μ m	
	Data lead-in area	0.102 μ m	
	Data area		
	Data lead-out area		
• Minimum mark length	System lead-in area	0.408 μ m	
	Data lead-in area	0.204 μ m	
	Data area		
	Data lead-out area		
• Maximum mark length	System lead-in area	2.652 μ m	
	Data lead-in area	1.326 μ m	
	Data area		
	Data lead-out area		
• Track pitch	System lead-in area	0.68 μ m	
	Data lead-in area	0.40 μ m	
	Data area		
	Data lead-out area		
<ul style="list-style-type: none"> • Disc diameter • Disc thickness • Cover layer thickness • Central hole diameter • Data area inside diameter • Data area diameter 		120 mm	
		1.20 mm	
		0.6 mm	
		15.0 mm	
		24.1 mm	
		58.0 mm	
<ul style="list-style-type: none"> • User data/sector • Error correction code • ECC restriction sector • Modulation 		2048 bytes	
		Leas Solomom product signal	
		RS(208, 192, 17) \times RS(182, 172, 11)	
		32 sectors	
		ETM, RLL(1, 10)	
• Correctable burst error length		7.1 mm	
• Reference scan speed		6.61 m/s	
• Channel bit rate to reference speed	System lead-in area	32.40 Mbps	
	Data lead-in area	64.80 Mbps	
	Data area		
	Data lead-out area		
• User bit rate to reference speed	System lead-in area	18.28 Mbps	
	Data lead-in area	36.55 Mbps	
	Data area		
	Data lead-out area		

FIG. 16

View explaining data arrangement in control data zone of reproduction-only/write-once type/rewritable type information recording medium

Physical format information
Disc manufacturer's information
Reservation

FIG. 17

View explaining contents of information in physical format reproduction-only information recording medium

BP	Contents	Number of bytes
0	Type of specification and type of part	1bytes
1	Disc size and maximum transfer speed of disc	1bytes
2	Disc structure	1bytes
3	Recording density	1bytes
4 to 15	Data area allocation	12bytes
16	BCA adapter	1bytes
17 to 2047	Reseration	2031bytes

FIG. 18

(BP 0) Type of specification and type of part

b7	b6	b5	b4	b3	b2	b1	b0
Type of specification				Type of part			

FIG. 19

(BP 1) Disc size and maximum transfer speed of disk

b7	b6	b5	b4	b3	b2	b1	b0
Disc size				Maximum transfer speed of disk			

FIG. 20

(BP 2) Disc structure

b7	b6	b5	b4	b3	b2	b1	b0
Reser- vation	Number of layers	Track path	Layer type				

FIG. 21

(BP 3) Recording density

b7	b6	b5	b4	b3	b2	b1	b0
Liner density				Track density			

FIG. 22

View explaining contents of data area allocation
information in reproduction-only/write-once
type/rewritable type information recording medium

BP	SL	PTP	OTP	Number of byte
4	00h			1bytes
5 to 7	Number of physical sector at the start of data area (03 0000h)			3bytes
8	00h			1bytes
9 to 11	Number of physical sector at the end of data area			3bytes
12	00h			1bytes
13 to 15	00 0000h		Number of physical sector at the end of layer 0	3bytes

FIG. 23

(BP 16) BCA descriptor

b7	b6	b5	b4	b3	b2	b1	b0
BCA flag	Reservation						

FIG. 24

View explaining recorded data density in respective areas of rewritable type information recording medium

Parameter		Single layer
<ul style="list-style-type: none"> • User data capacity • Wavelength of laser diode • Numerical aperture of objective lens 		20 Gbytes/side
		405 nm
		0.65
• Data bit length	System lead-in area	0.306 μ m
	Data lead-in area	0.130 to 0.140 μ m
	Data area	
	Data lead-out area	
• Channel bit length	System lead-in area	0.204 μ m
	Data lead-in area	0.087 to 0.093 μ m
	Data area	
	Data lead-out area	
• Minimum mark length(2T)	System lead-in area	0.408 μ m
	Data lead-in area	0.173 to 0.187 μ m
	Data area	
	Data lead-out area	
• Maximum mark length(13T)	System lead-in area	2.652 μ m
	Data lead-in area	1.126 to 1.213 μ m
	Data area	
	Data lead-out area	
• Track pitch	System lead-in area	0.68 μ m
	Data lead-in area	0.34 μ m
	Data area	
	Data lead-out area	
• Physical address	Data lead-in area	*WAP *WAP = Wobble Address in Periodic position (Cyclic Wobble address)
	Data area	
	Data lead-out area	
<ul style="list-style-type: none"> • Disc diameter • Disc thickness • Central hole diameter • Data area inside diameter • Data area diameter 		120 mm 1.20 mm 15.0 mm 24.1 mm 57.89 mm
<ul style="list-style-type: none"> • User data/sector • Error correction code • ECC restriction sector • Modulation 		2048 bytes Leas Solomom product signal RS(208, 192, 17) × RS(182, 172, 11) 32 sectors ETM, RLL (1, 10)
• Correctable burst error length	System lead-in area	7.1 mm
• Reference scan speed	Data lead-in area	6.0 mm
	Data area	
	Data lead-out area	
	System lead-in area	6.61 m/s
• Channel bit rate to reference speed	Data lead-in area	5.64 to 6.03 m/s
	Data area	
	Data lead-out area	
	System lead-in area	32.40 Mbps
• User bit rate to reference speed	Data lead-in area	64.80 Mbps
	Data area	
	Data lead-out area	
	System lead-in area	18.28 Mbps
• User bit rate to reference speed	Data lead-in area	36.55 Mbps
	Data area	
	Data lead-out area	
	System lead-in area	

FIG. 25

View explaining data structure of lead-in area in rewritable type information recording medium

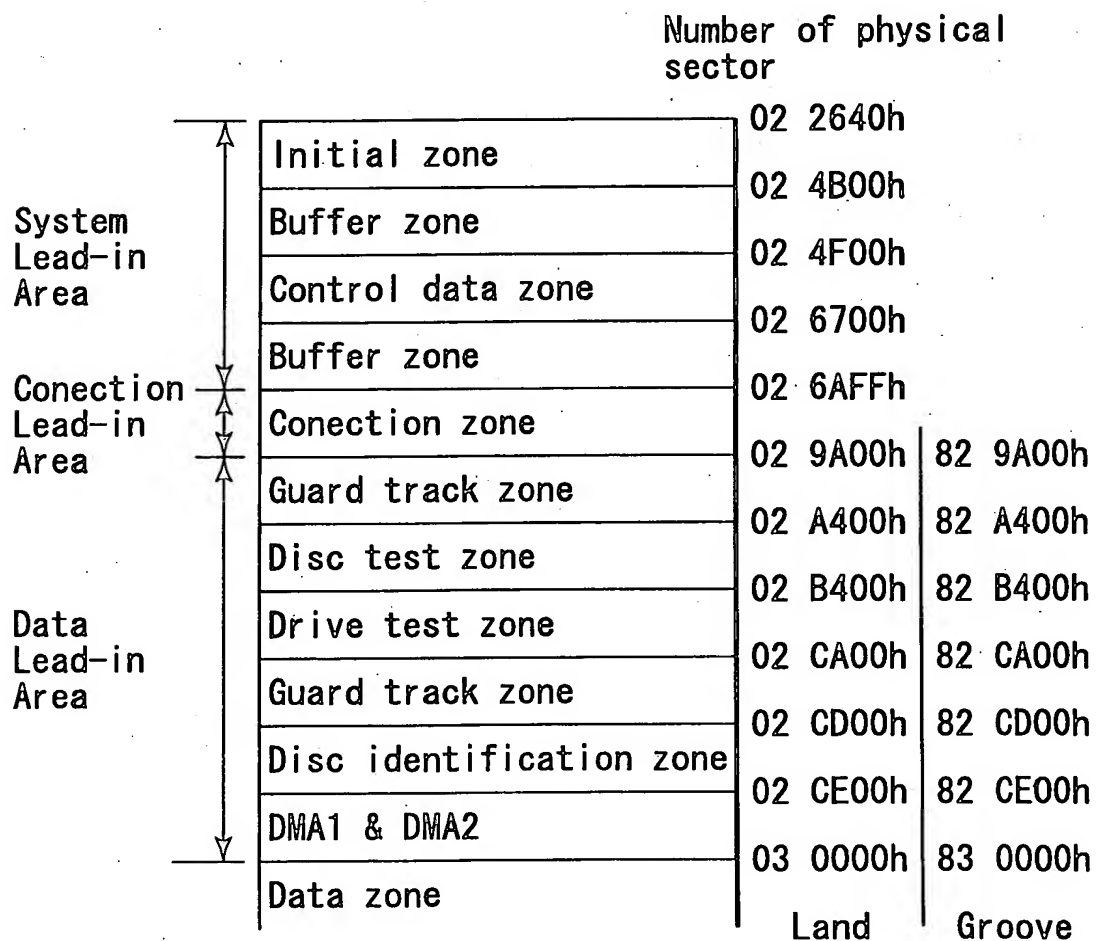


FIG. 26

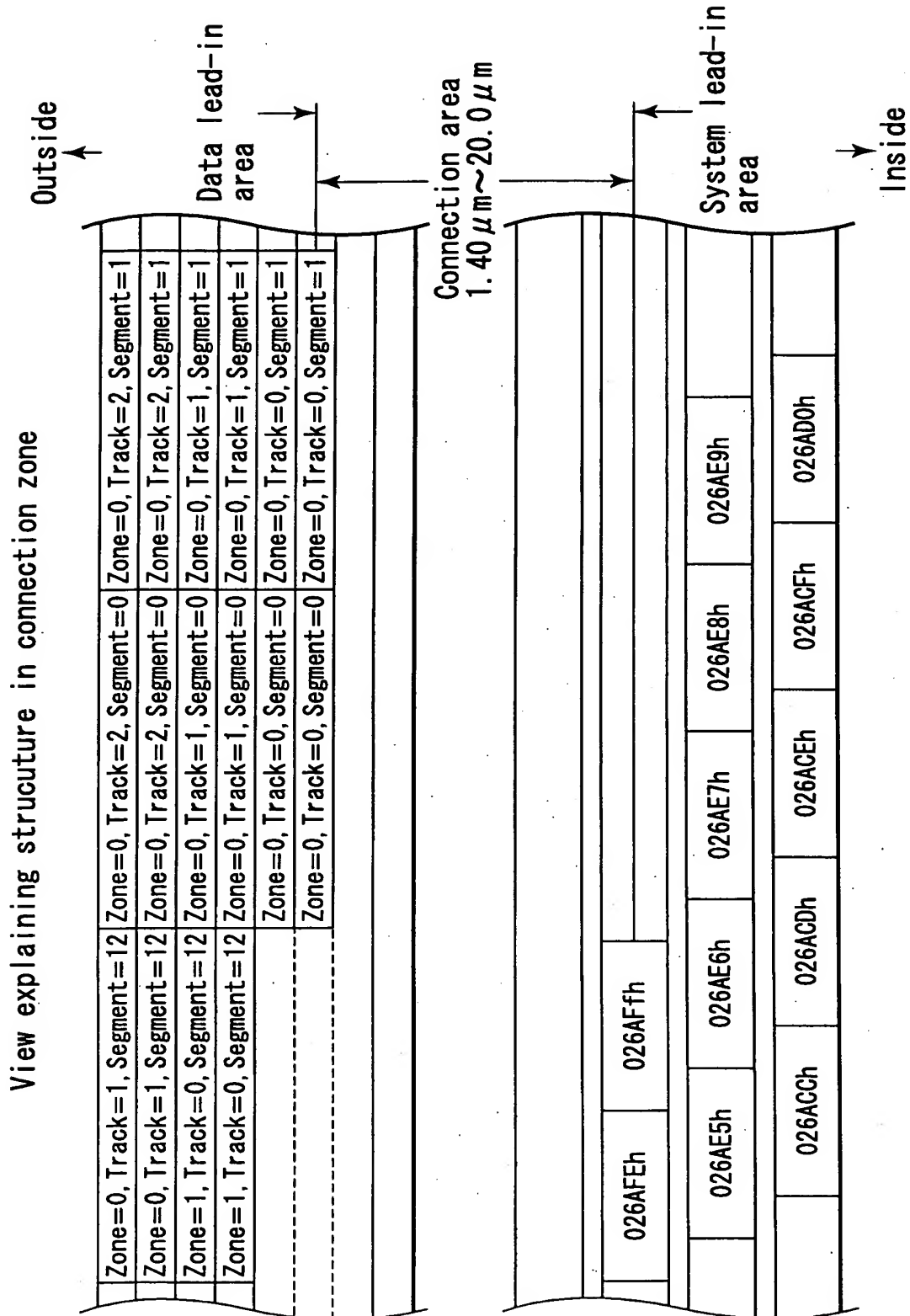


FIG. 27

View explaining data structure in lead-in area of
write-once type information recording medium

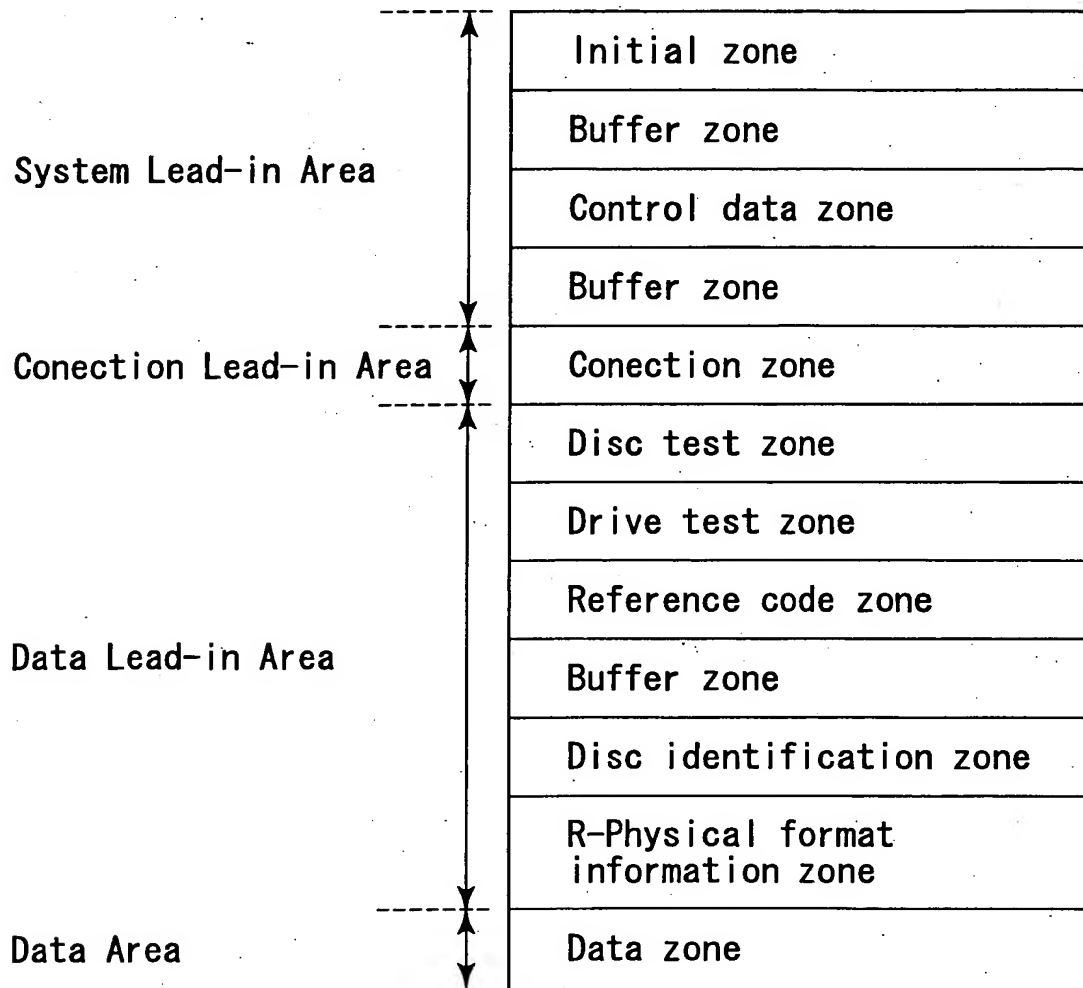


FIG. 28

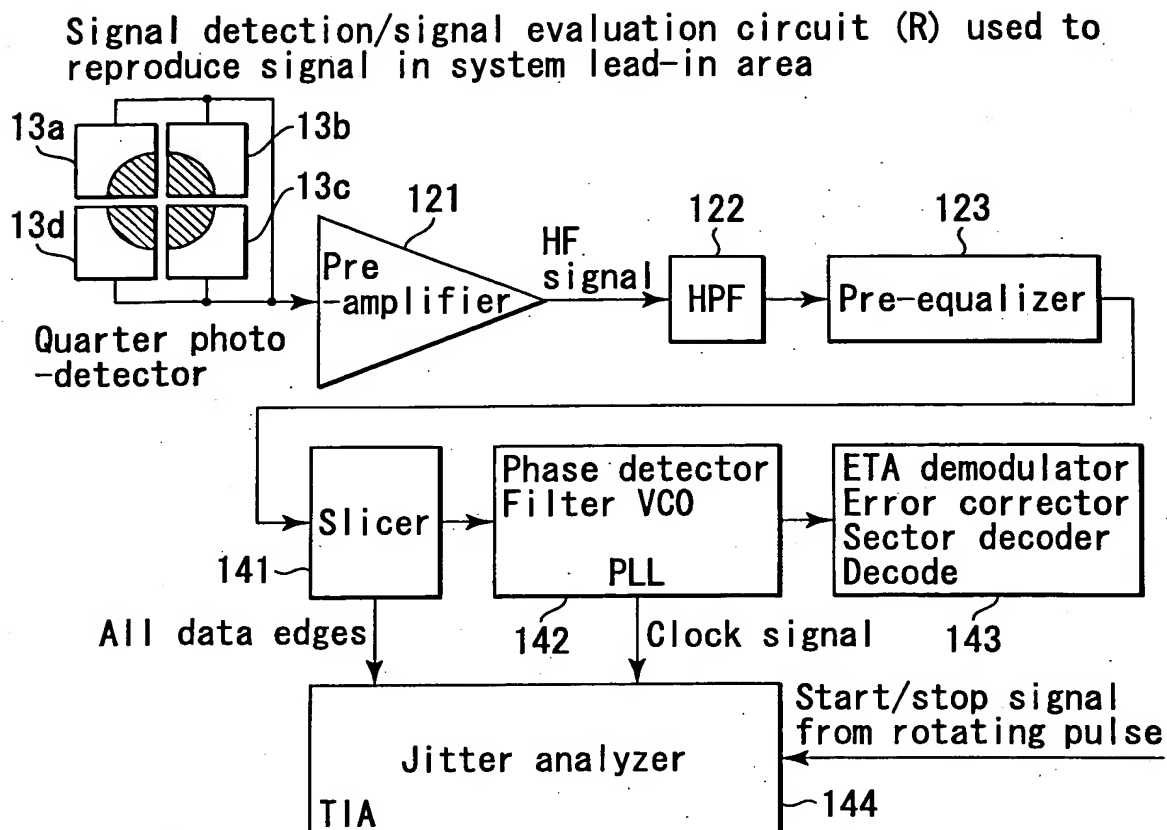


FIG. 29

View explaining structure of slicer circuit used to reproduce signal in system lead-in area

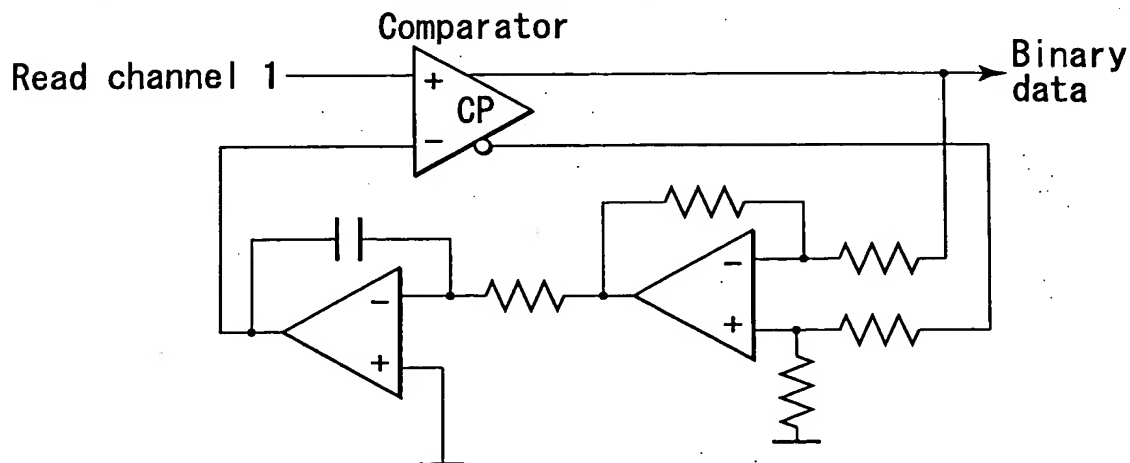


FIG. 30

View explaining detection circuit used to detect signals in data lead-in area, data area, and data lead-out area

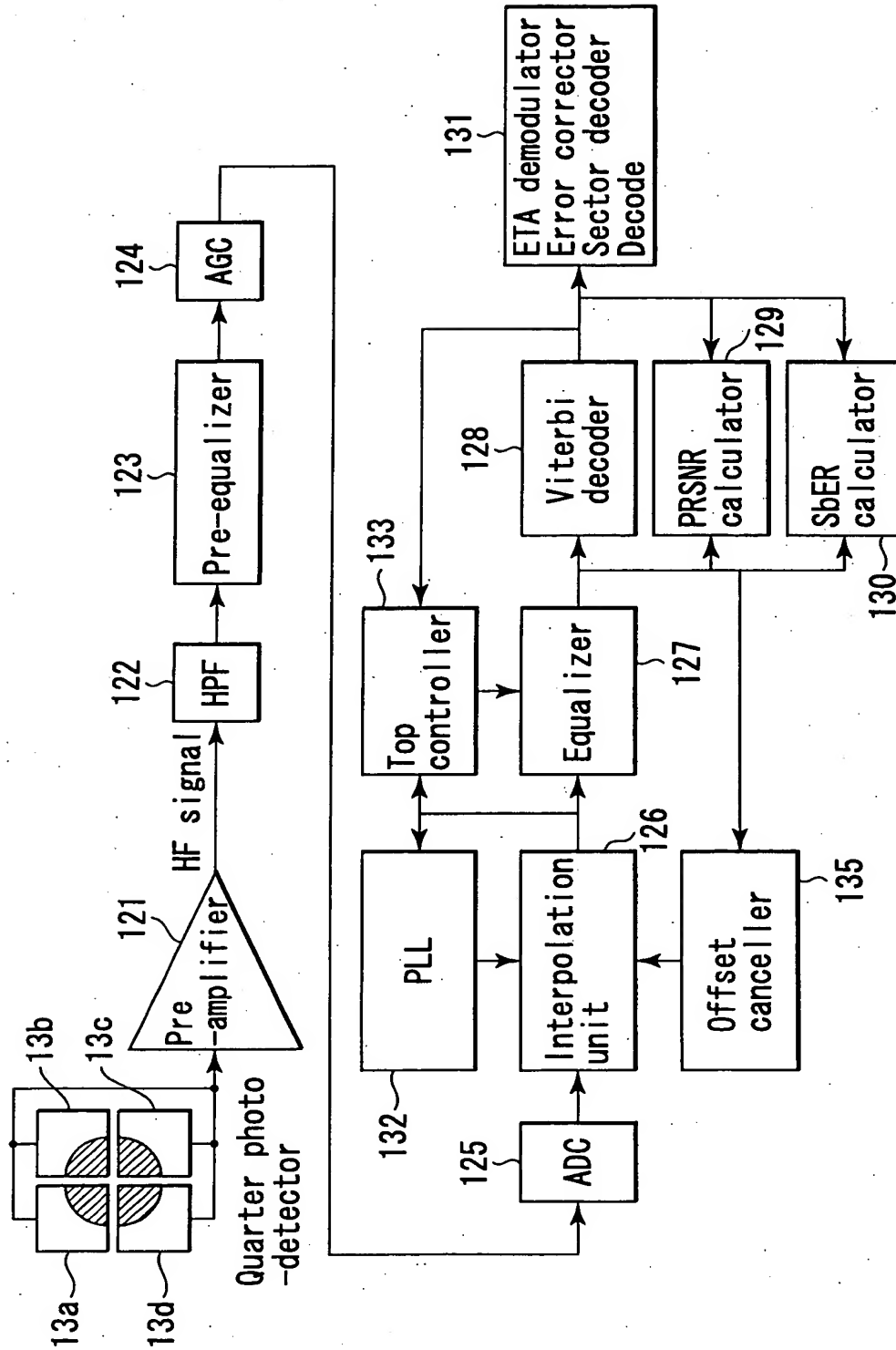


FIG. 31

View explaining structure in viterbi decoder

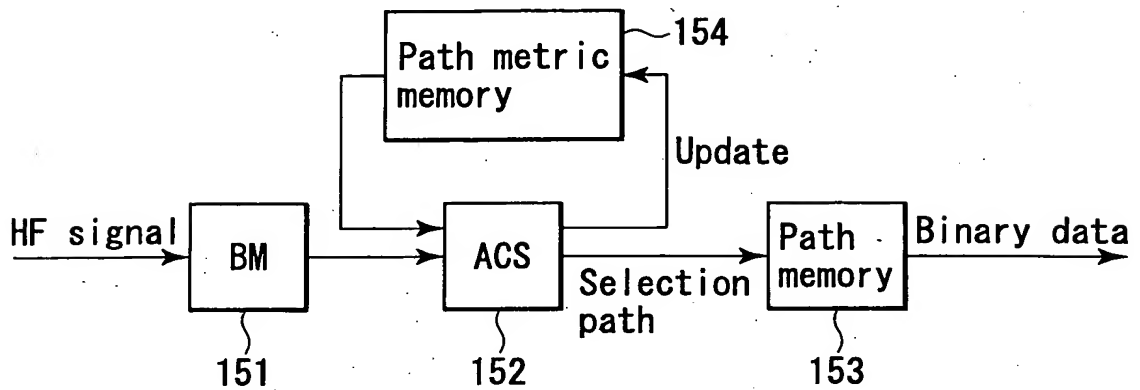


FIG. 32

View explaining transition state of pr(1,2,2,2,1) channel
Combined with ETM code

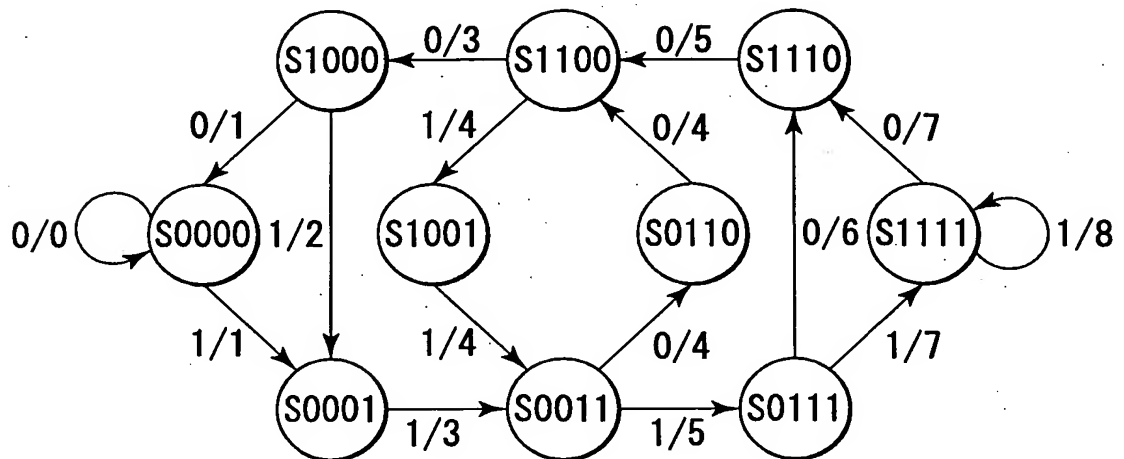


FIG. 33

View explaining path memory

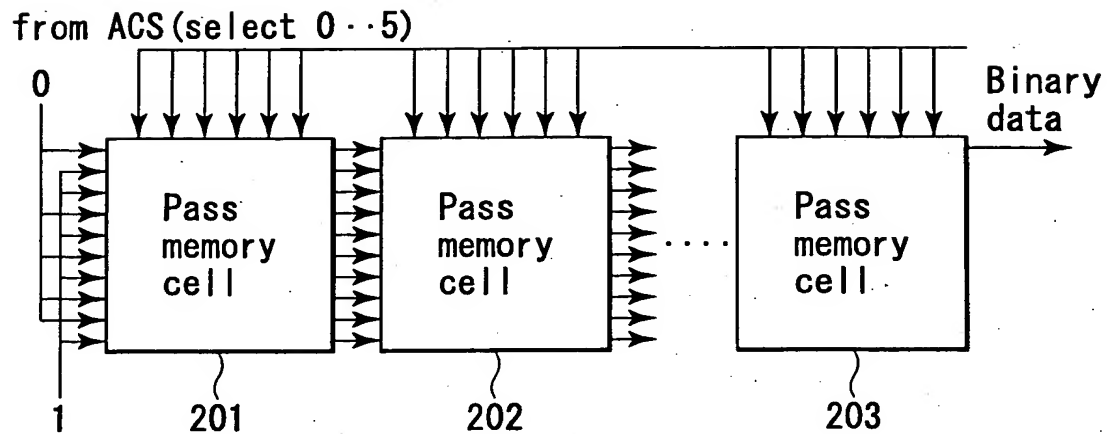


FIG. 34

View explaining I/O of path memory cell

	select 0	select 1	select 2	select 3	select 4	select 5	
Input 0							Output 0
Input 1							Output 1
Input 2							Output 2
Input 3							Output 3
Input 4							Output 4
Input 5							Output 5
Input 6							Output 6
Input 7							Output 7
Input 8							Output 8
Input 9							Output 9

FIG. 35

View explaining configuration of path memory cell

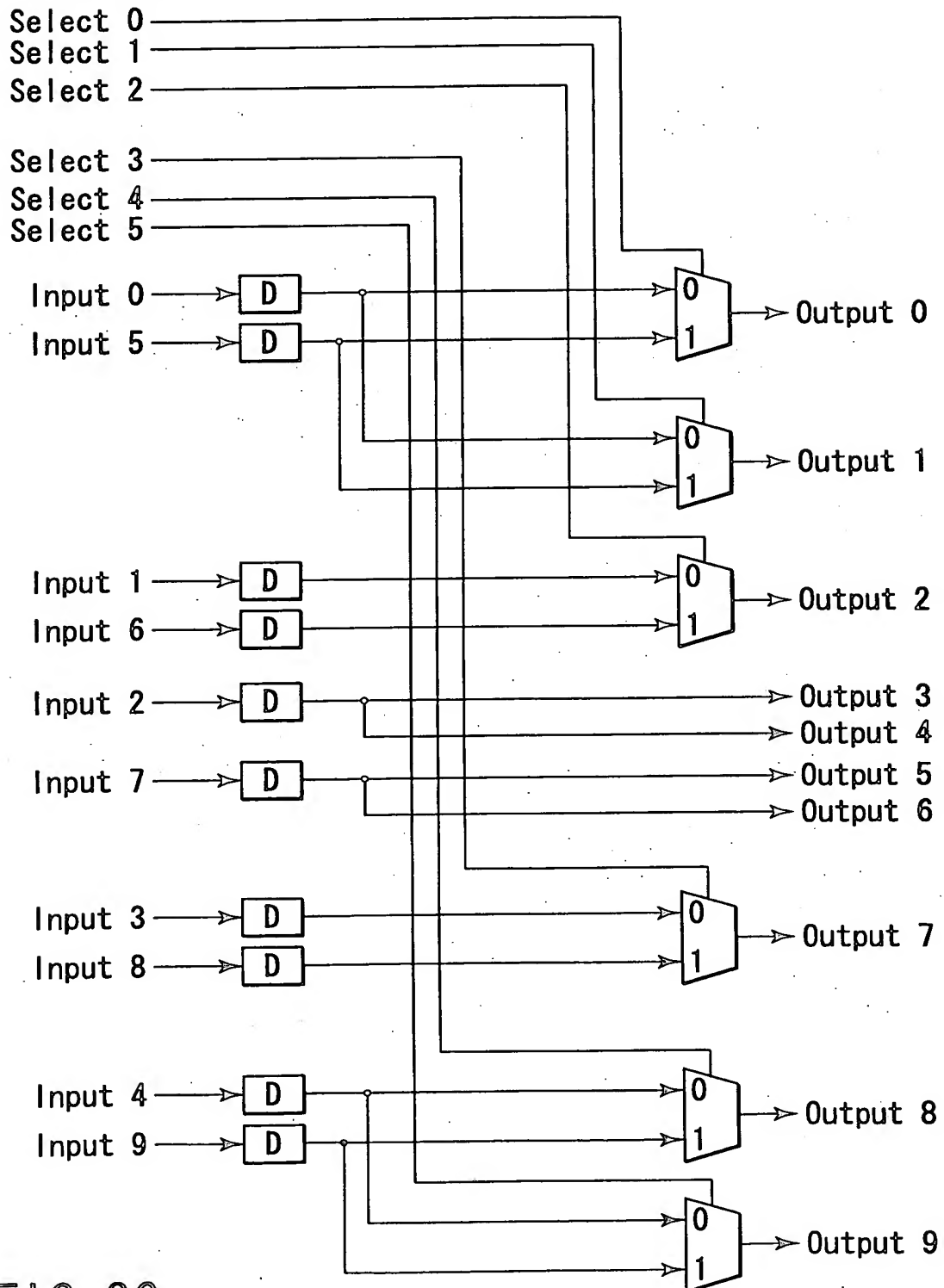


FIG. 36